

Please add new claim 21 as follows:

B2 p. 54
21. The method of claim 15, wherein the metal layer is copper. --

REMARKS

This is intended as a full and complete response to the Office Action dated March 3, 1999. Applicants propose amending the drawing in a separate request filed with this response. Applicants confirm election of claims 1-18 and 20, and request allowance of claims 1-8, 11-18, and 20-21 as discussed below.

The Examiner has objected to informalities in the specification. Applicants have amended the specification to refer to Fig. 11 at the point where the specification describes Fig. 11. Applicants have further amended the specification to identify the magnets as 68 as shown in the drawings instead of 58 which is used for another component. Applicants submit that the corrections to the specification and drawings obviate the objections presented by the Examiner and request withdrawal of the objections.

Response to Restriction Requirement

Claims 1-20 were previously restricted in this application, and claims 1-18 and 20 were previously elected with traverse for consideration by the Examiner. Applicants confirm election of claims 1-18 and 20, and have canceled claim 19 in this response. Applicants further present new claim 21 which corresponds to elected claims 1-18 and 20.

Response to Rejections

Claims 1-4, 8, and 20 stand rejected under § 102(b) as anticipated by *Taguchi et al.* on grounds that the reference discloses all elements of the claimed method for depositing Si_xN_y layers. Applicants respectfully traverse this rejection on grounds that the claims as amended include the novel combination of depositing and etching an Si_xN_y layer, depositing a barrier layer comprising Ta, TaN, TaSiN, or TiSiN, and depositing a metal comprising copper. Applicants further submit that the claimed combination is not taught, shown, or suggested by the art of record as discussed for claim 5 below. Withdrawal of the rejection is respectfully requested.

Claims 1-8, 11-12, and 20 stand rejected under § 103 as obvious in view of various combinations of *Taguchi et al.*, *Ho et al.*, *Barnes et al.*, and *Bunshah et al.* on grounds that the references disclose all elements of the claimed methods including sputtering tantalum and copper with high density plasma. Applicants respectfully traverse this rejection on grounds that the claimed combination of depositing and etching the Si_xN_y layer with depositing Ta, TaN, TaSiN, or TiSiN, and depositing a metal comprising copper is not taught, shown, or suggested by the art of record. *Taguchi et al.* describes combination of a Si_xN_y layer, a titanium layer, and an aluminum layer, and does not suggest replacement of the barrier layer and the aluminum as claimed by Applicants. *Ho et al.* describes filling of apertures with copper, and does not suggest deposition and etching of Si_xN_y layers to prevent migration of metal. The remaining references generally relate to depositing copper layers without mention of Si_xN_y . The Examiner fails to identify any motivation within the references for combining the disclosures of the references. Thus, the rejection is not supported by the references cited by the Examiner and withdrawal of the rejection is respectfully requested.

Claims 13 and 14 are objected to on grounds that the specification does not provide sufficient utility for depositing metal layers using high temperatures and high pressures. Applicants respectfully traverse this objection on grounds that the combination of low deposition temperatures and high chamber pressures is a known method for enhancing filling of features with metal. The use of low temperature to deposit copper and high pressure to fill features is sufficiently described in the specification at page 5, lines 18-20, to support claims 14 and 15. Allowance of claims 13 and 14 is respectfully requested.

Claims 15-18 stand rejected under § 102(b) as anticipated by *Taguchi et al.* on grounds that the reference discloses all elements of the claimed method for depositing Si_xN_y layers. Applicants respectfully traverse this rejection on grounds that the claims as amended include the novel combination of depositing a Si_xN_y layer that is etched to expose an underlayer within a feature such as a contact hole or via, and depositing a metal layer on the underlayer to fill the feature. As described in the specification for Figs. 7-11, the metal layer can be deposited directly on the underlayer to fill the feature contrary to the teaching of *Taguchi et al.* The claimed method is not taught, shown, or suggested by the art of record. Withdrawal of the rejection is respectfully requested.

All references of record that were not cited by the Examiner are considered to be less relevant to the claimed invention than the cited references, and are not addressed by Applicants.

In view of the above, Applicants request entry of the amendment, and allowance of claims 1-8, 11-18, and 20-21.

Respectfully submitted,



Keith M. Tackett
Registration No. 32,008
PATTERSON & ASSOCIATES
3040 Post Oak Blvd., Suite 1500
Houston, Texas 77056
Telephone 713/623-4844
Facsimile 713/623-4846
Attorney for Applicant